Supporting Information for "Variability of water vapor in the tropical middle atmosphere observed from satellites and interpreted using SD-WACCM simulations"

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Introduction

This supporting information provides additional figures of time series and trends of water vapor from different data. Fig. S1 compares our merged satellite data with two other datasets: SWOOSH and GOZCARDS, and they show good agreement overall. Fig. S2 shows the water vapor trend in HALOE, SABER, MLS, and SD-WACCM over different periods. We emphasize that MLS, SABER, and SD-WACCM shows similar trend over 2005-2020.
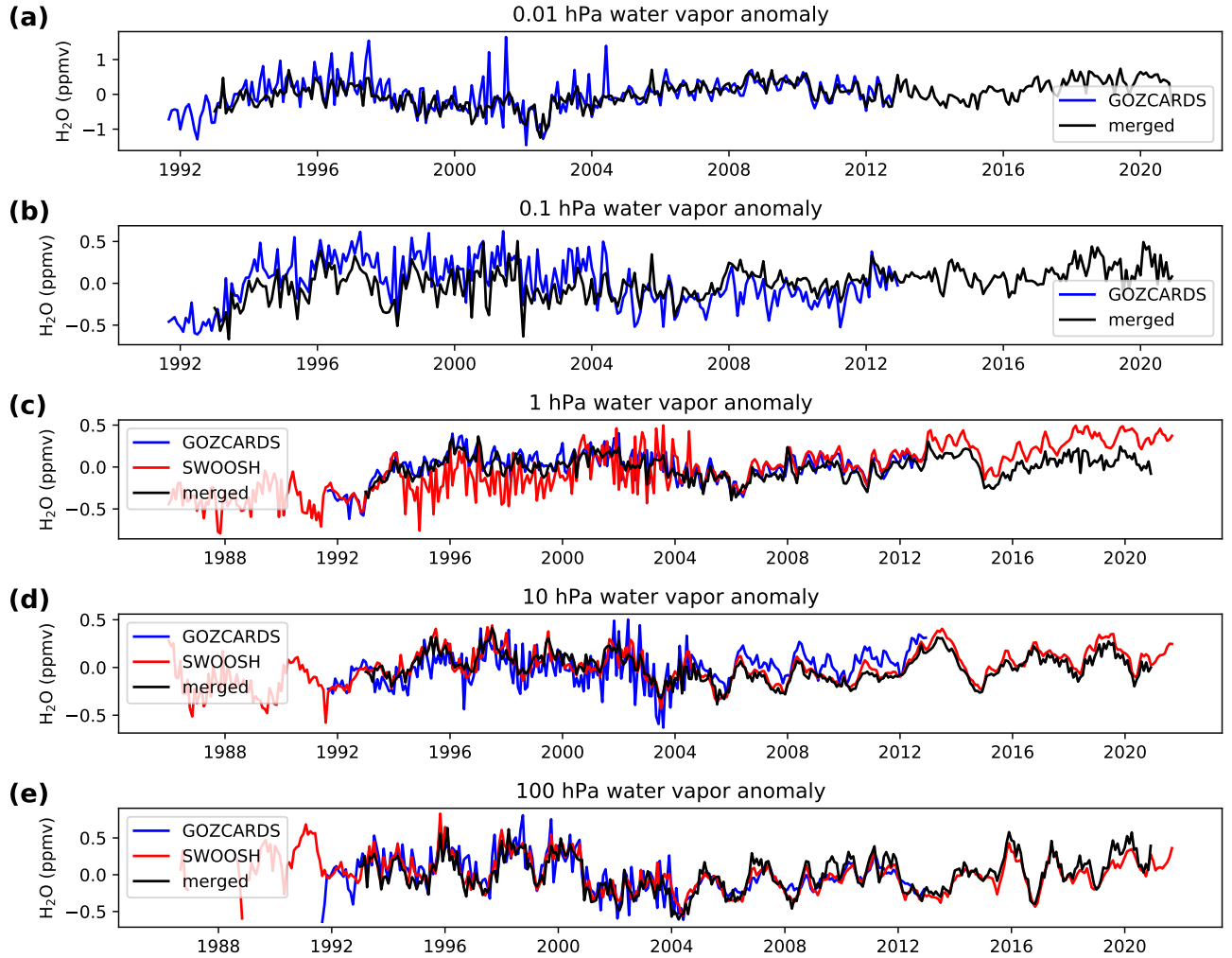
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Figure S1. Time series of 30°N-30°S mean deseasonalized water vapor mixing ratio at (a) 0.01 hPa, (b) 0.1 hPa, (c) 1 hPa, (d) 10 hPa, and (e) 100 hPa, in GOZCARDS (blue lines), SWOOSH (red lines), and our merged data (black lines).
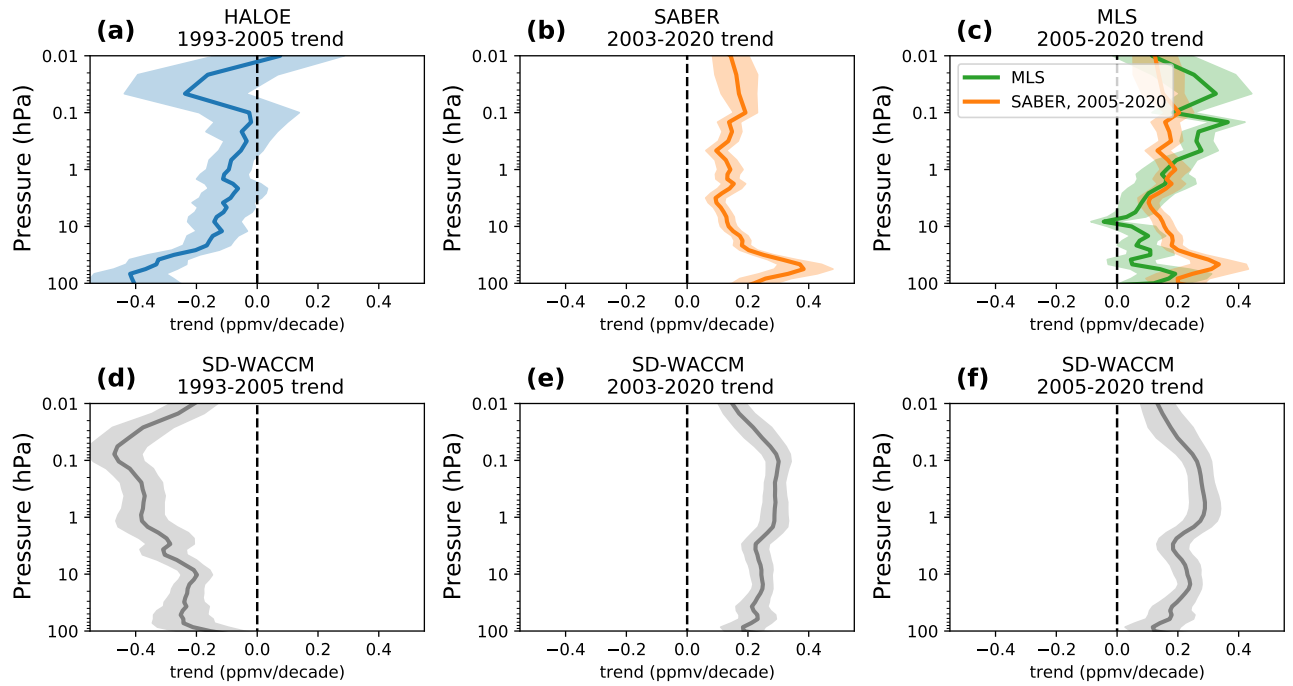
Figure S2. (a) Vertical profile of the mean water vapor mixing ratio trend averaged over 30°N-30°S for the period 1993-2005 in HALOE data, The dark shading denotes the 2-sigma uncertainty range; (b) same as in (a), but for the period 2003-2020 in SABER data; (c) same as in (a), but for period 2005-2020 in SABER (grey) and MLS (green) data. (e-f), same period as in (a-c), but in SD-WACCM.